Current & Emerging X-Band Utilization Requirements for the PrioraNet Commercial Ground Station Network

EESS X-Band Workshop

Toulouse, France

June 22-24 2005

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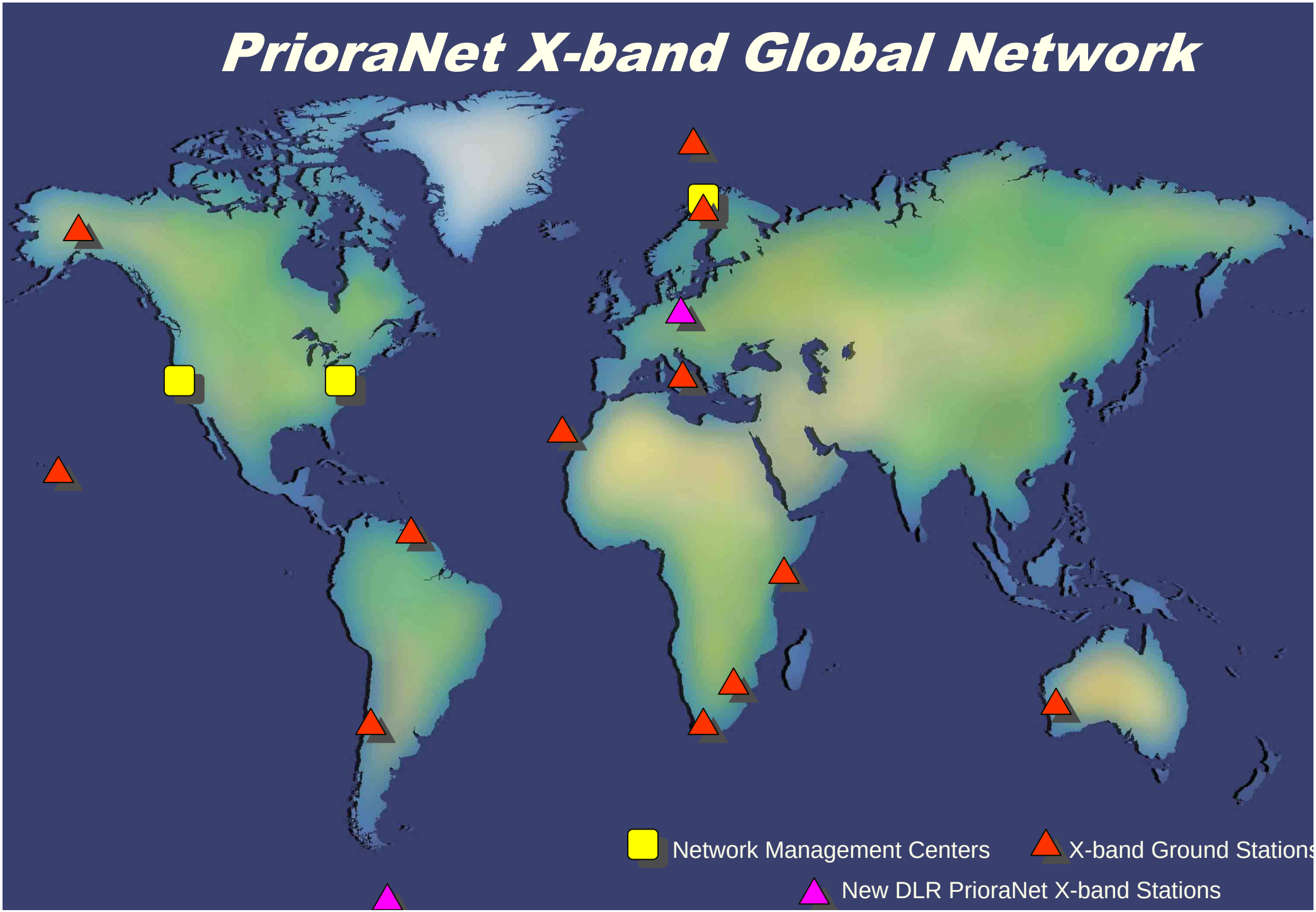
What We Do

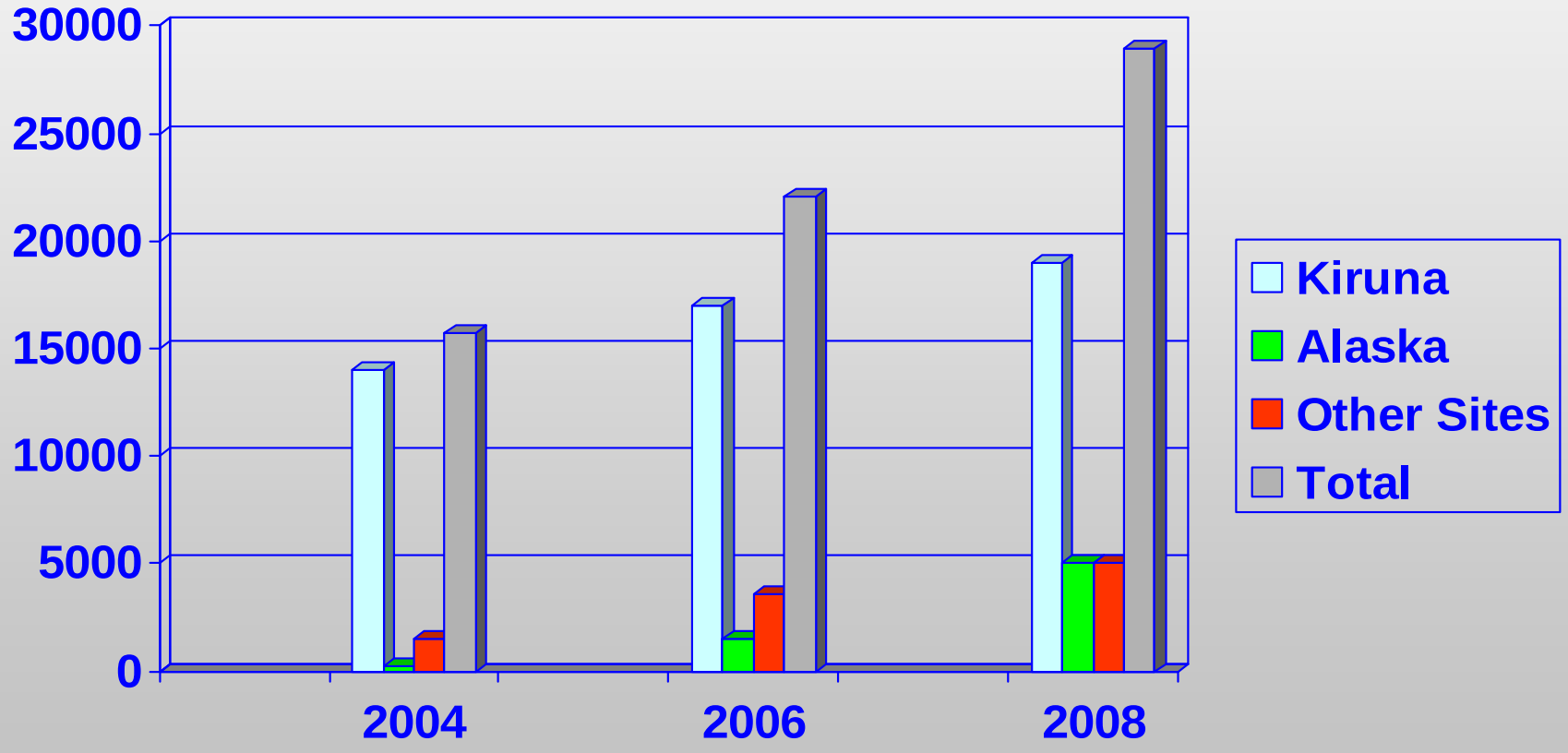
Universal Space Network and the Swedish Space Corporation own and operate PrioraNet
-- *a global satellite TT&C network providing S, X, Ku, and L band services to the international commercial and government satellite community*


PrioraNet X-band Global Network
Network Management Centers
X-band Ground Stations
New DLR PrioraNet X-band Stations

X-Band Frequency Utilization Challenges

- Band allocation is becoming a challenge at the poles
  - Expected to require increased frequency coordination and mission downlink coordination within the next 2-4 years
- Polar concentration of ground will require both mission level and station level coordination
- Likely in the near term that more 10,000 pound gorilla's will emerge as X-Band Users
- Coordination alone most likely will not meet customer data access requirements

PrioraNet X-Band Loading



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X-Band Coordination Mechanisms & Concerns

- No current mechanisms in place
- Commercial operators need to provide their customers assured access to their satellite data
  - Commercial Users
  - Government Users
- As the loading increases **coordination mechanisms will be important** but most likely not be able to completely alleviate conflicts or fully satisfy customer data access requirements

PrioraNet's Bi-Polar Approach

Provides customers assured access to X-Band data using:

- Multiple polar stations in one network
  - North Pole (Alaska)
  - Kiruna (Sweden)
  - O'Higgins (Antarctica)
- All stations at high southern latitude 63-68 degrees
  - Regionalizes interference problems
  - Multiple redundancy
  - All stations up and running
  - Multiple NMC customer access

Bi-Polar Approach (Cont'd)

- Coordinated approach between DLR/SSC/PrioraNet
- Full inclusion of DLR in PrioraNet after signature
- Customer has choice of data dumps and direct reception
- Integration will be intensified so that the customer only sees on access point

EESS X-Band Conflict Resolution options

- Expand the current EESS tracking station utilization options to include additional commercial X-band tracking network resources

Advantages

- High Rate X-Band non-polar stations provide possible relief for polar X-Band crowding and RFI

Challenges

- Requires high rate RF/baseband equipment augmentation
- New communications lines
- Data latency and mission objectives may prevent use

Longer Term Solutions

- Use of existing and planned Ka-band networks

- Add Ka-band resources to existing PrioraNet stations as demand requires